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ABSTRACT

Based on research conducted in 1996 and 1999, this paper discusses theoretical issues and provides an overview of the purposes for which school libraries are creating and maintaining home pages or World Wide Web sites. In 1996, a content analysis was performed of Web sites of 50 school libraries in the United States, Australia, Canada, Sweden, Singapore, Iceland, Kuwait, New Zealand, and Norway. A longitudinal study was designed in 1999 to examine: whether the Web pages/sites included in the 1996 study have been developed further or improved; the current "state of the art" in terms of school library Web sites; overall improvement in the school library Web pages/sites; differences in aims, purposes, design, organization, and content of school library Web pages/sites between 1996 and 1999; and new ways of organizing links and any evidence of a developing consensus about the best way(s) of organizing links for effective use. The research has implications for those who are planning a Web page/site for their school library/media center; it provides information about what other school libraries/media centers have done and suggests some pitfalls that might be avoided. It also suggests areas for further study, notably the possible development of a model that might be used for the evaluation of school library Web sites. (Contains 42 references.) (MES)

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The School Library Web Site

On the Information Highway or Stalled in the Carpark?

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Based on research conducted by the author in 1996 and 1999, this paper discusses theoretical issues and provides an overview of the purposes for which school libraries are creating and maintaining home pages or Web sites. The research has implications for those who are planning a Web page or site for their school library/media center; among other things, it provides information about what other school libraries/media centers have done and suggests some pitfalls that might be avoided. It also suggests areas for further study, notably the possible development of a model that might be used for the evaluation of school library Web sites.

Background

By 1995, some school libraries were establishing home pages on the World Wide Web, and this activity increased in 1996; a few school libraries even had small Web sites consisting of several pages of information and links to Internet resources. Reflecting these developments, two international directories of school library home pages were created by school library media specialists in the United States: Peter Milbury's "School Library and School Librarian Web Pages" (now called "K12 School Library Web Pages Maintained by Their Librarians"); and Linda Bertland's "School Library Pages". Through them, school librarians could explore the pages that had been developed by other school librarians to see what was being done in schools similar to their own and to collect ideas. However, even a cursory view of the school library Web pages listed by Milbury and Bertland showed a wide range of style, content, and level of Web page development skills, and suggested that the page developers had very different ideas about the aims and purposes of a school library Web page or Web site.

To test this impression, a formal small-scale investigation of school library Web pages was carried out by the author in the second half of 1996 (Clyde, 1996a; Clyde, 1996b). This investigation took the form of a content analysis of 50 school library home pages or Web sites, the aim of which was to identify the characteristics and features of school library home pages/sites, and the kinds of information that school libraries were providing through their pages. The research was purely descriptive -- an attempt to provide a picture of the then current "state of the art" in relation to school library Web pages/sites. As such, it served a useful purpose in that it established a base line against which to measure future developments. It was also useful for

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trainers (including the author) who were conducting Web "pagemaking" courses for school librarians.

The Web pages/sites for inclusion in the study were located using the directories of Milbury and Bertland. A little over half of the school libraries in the sample were in the United States, with the rest coming from eight different countries: Australia, Canada, Sweden, Singapore, Iceland, Kuwait, New Zealand, and Norway. There were many more secondary/high schools than elementary/primary schools, with some middle schools, K-12 schools, and special schools. All of the pages included in the study were accessed on the one day (19 August 1996) and a matrix was used to record the features of each page/site. Table 1 provides a summary of the content analysis of the pages/sites.

Table 1: Contents of School Library Web Pages/Sites 1996 (n=50)

FEATURE	No. OF PAGES/SITES
Name of school and library	41
Links to selected Internet resources/sites	31
Information about the school library	29
Interactive email content address	28
Links to a school home page	24
Date of the last update of the page/site	19
Links to Internet search engines	15
Address of the school/library	14
Counter	11
Information about Internet projects undertaken in/through the library	9
Research skills information, e.g., the "Big 6", "Be Definite", research guides	8
Links to Internet resources for teachers	8
Links to Internet resources for school librarians	8
List of CD-ROMs in the school library	8
Book reviews, lists of books recommended by students, school book club choices, etc.	7
Photograph of the school library	6
Information (or links to information) about citing Internet resources in bibliographies	6
Links to HTML guides or information about creating a home page	5
Links to resources about the local area/region	5
News about the library or library activities	4
Information about the Internet for library users	4
Internet tutorial	4
Online reference desk for email inquiries	3
Information about Internet access and policies in the school/library	3
The library rules	2
Electronic magazines	1

The design, format, and content of these school library Web pages/sites did indeed suggest that school libraries may have very different aims in developing their pages. However, some pages had no readily-discernable aim or purpose, and only a few actually identified the intended audience (either by a statement of purpose or by clear implication). Seven had been developed for students in the school, to help them to find Internet resources, or to help them to search for materials, while one was aimed at teachers in the school. One was developed for "students,

teachers, and visitors" -- a diverse group with very different needs; another was for "students, teachers and parents". Six were clearly intended for online visitors from outside the school, in that they were little more than selections from a school prospectus transferred from print to the Internet. The intended audience for the other 34 school library pages/sites was impossible to discern from the pages themselves, and it may be that they had been created with no particular audience in mind. It is very difficult to select and present information to meet the needs of users if neither the potential users nor their needs have been identified, and so these pages tended to include a miscellany of material and links, at a variety of levels, usually without any indication of purpose and without any linking theme. It is interesting that eight of the pages provided links to Internet resources for school librarians, suggesting that in some cases the school library staff themselves were among the main users of the pages.

Just as the intended audience for these school library Web pages/sites (where known) was varied, so too were the contents (see Table 1). What is most surprising here is that nine of the Web pages/sites did not include the most basic of identifying information, the name of the school and the library. Although 28 home pages provided an interactive email address for contact with the library staff, only 14 provided the street address of the school library, and some did not even name the town, state/province, or country. Some 29 of the 50 pages/sites provided other information about the school library, this material ranging in length from a few sentences to detailed descriptions of buildings, collections, services, and policies. Six incorporated a photograph of the school library and four had photographs of the school library staff, but more than one-third had no visual information at all (beyond decorative lettering and/or graphics). While the information provided on several pages indicated that the school library had a computer-based catalog, none of the Web pages provided search access to the catalog, though one Australian school library page showed this as a future development.

One of the more common features of the school library pages/sites was the provision of links to resources on the Internet (31 of the 50), though the number of links varied greatly from school to school. Sometimes there was just a plain list of links, perhaps with a short description or annotation for each link. However, some school libraries seem to have given considerable thought to how these links would be presented. The strategies adopted included listing by broad topic, by school subject, by the name of the course for which they would be used, by the curriculum unit, by the actual assignment or project for which they would be used. Occasionally another classification scheme was employed -- for example, a geographical arrangement (such as "resources in the school", "resources in our local community", "resources in our state", "resources in other places"), or even an arrangement based on the main Dewey classes. There appears, then, to be very little agreement about the most appropriate or effective ways in which to organize links on Web pages created for school libraries. This is clearly an area in which further work is needed, and it was anticipated that a follow-up study might identify trends since 1996.

Just under one-third of the pages were apparently designed (at least in part) to help school students (and sometimes their teachers as well) to use the Internet and to incorporate information from the Internet into their work. Eight pages/sites had (or had links to) information skills resources, usually presented for students; the most popular was the "Big 6" information skills sequence developed by Michael Eisenberg and Bob Berkowitz (1990) in the United States, but two Australian pages/sites presented information skills guides developed in Australia. To assist

students to use Internet resources appropriately, six of the pages/sites had information (or links to information) about citing Internet resources, and general information about preparing bibliographies. Four pages/sites had Internet tutorials designed to help students to understand the Internet and to use it more effectively; one of these presented the material in an interesting way in the form of training for an "Internet Driver's License".

The 1996 content analysis gave an indication of the wide range of possibilities for school library Web page/site organization and the information that might be provided through Web pages. As such, it was a useful source of ideas for school librarians who were planning to take their school library "onto the information superhighway" by developing a Web page or site. However, the analysis also gave an indication of how many of the school library Web pages/sites were falling short of even the most basic expectations in August 1996, effectively being "stalled in the carpark" before the access road to the information highway. It also suggested that many did not reflect the educational function of the modern school library/media center.

The Literature

The 1996 study described above was planned and carried out at a time when the professional and research literature related to the topic was sparse. Monitoring of the literature has continued in the period from 1996 onwards; while the situation has improved, there are nevertheless considerable gaps, and the professional literature related to school library Web pages/sites far exceeds the research literature. This is probably understandable when developments in technology (and the adoption of the technology in schools) are occurring at such a fast pace.

A number of books have been published in the last three or four years that provide information for teachers and others who are developing school Web sites (see, for example, Classroom Connect, 1998; Hixson & Schrock, 1998; Barron, 1997); these tend to focus on the curriculum applications of Web pages, or "Web publishing as a learning tool" (Hixson & Schrock, 1998). At the same time, articles and books have appeared to support the work of librarians who are developing Web sites for their libraries or information agencies (see, for example, Garlock & Piontek, 1996; Champelli & Rosenbaum, 1997). The latter tend to see the Web site as "a promotional tool for the library and its parent organization" (Boudreau, 1998, p.264), or in terms of library functions such as reference work, catalog access, or publishing; educational applications are seldom mentioned as a priority. School library needs have tended to fall somewhere between the educational or curriculum-related sites and the library-related sites, sometimes reflecting aspects of both, as the 1996 study suggested, though without any strong trends emerging at that time. This raises the question of whether or not school libraries have unique needs in terms of Web page/site advice, beyond that written for teachers of for libraries in general. The results of the 1996 study, suggest that some guidance is needed, though more work would be needed to confirm the nature of the needs.

The articles that are available tend to reinforce the general impression of differences between advice given to librarians and advice given to teachers. Guides for teachers (for example, School Web Site..., 1998) suggest that student work should form the basis of a school Web site. Advice for librarians, on the other hand, tends to focus on provision of quality information (National Library of Australia, 1999; Raitt, 1998), reference assistance and library guides (Cooper, 1997),

and provision of access to databases (Xiao, Mosley & Cornish, 1997), among other library- and information-related applications. Articles written specifically for school librarians tend to reflect both the educational aspects and the library- and information-related aspects: for example, Hewer (1998) emphasizes publicity and public relations ("raising your library's profile within your school and beyond, while emphasizing the wide reaching and influential role of the teacher librarian"); meanwhile, Mitchell (1998) concentrates on the school library Web site as a way of helping teachers and students to navigate the Internet and find curriculum-related resources. Clearly, we cannot look to the professional literature for consensus on school library Web pages.

Two very different research studies highlight both the diversity in school Web sites and library Web sites, and, in many instances, their lack of focus. The report of a descriptive pilot study of school Web sites in the United States (Gray, Romano & Clark, 1998) noted that "unfortunately, the impetus to create school Web pages has preceded the development of a theory governing their contents"; further, "in the brave new world of instantaneous, world-wide digital communications, the first impression is one of school Web site developers who do not seem to know why they've put their sites there. Or, if they do know why, they're apparently lacking in the knowledge of how to achieve their goals" (Carlson, 1998). Not only that, but "whatever the numbers, a tour of school Web sites leaves the impression that they are mostly inadequate or counterproductive, with a lot of time, energy, and in some cases, money downright wasted" (Carlson, 1998). In 1998, Leticia Morito Lopez (1998) carried out a comparative study of Icelandic and Spanish library Web sites, based on the content analysis methodology developed by the author for the 1996 study of school library Web pages/sites. One of the problems she identified was "confusion over the concept of the home page"; another was a "lack of strategic planning" -- when librarians are developing a Web site, "they don't usually think about what they really want to do with the site". She notes that librarians should "know what they want to transmit with their new site, the potential users who might consult the pages, and the aims in creating this new service". While her remarks are directed at libraries in general (reflecting the basis of her study), they could also be directed to the school libraries whose Web pages/sites were included in the author's 1996 study.

With no consensus on what a school, library, or school library Web site should be like, it is not surprising that there is a wide range of views about, and strategies for, Web page/site evaluation. Librarians (including some school librarians) tend to see Web site evaluation as an extension of the evaluation of library resources in other formats (including books and audiovisual materials). Consequently, their schemes for Web page evaluation usually reflect traditional library criteria such as "authority", "reliability", "accuracy", "recency", "ease of use", and "appropriateness for the needs of users" (see, for example, ICONnect, 1999; Caywood, 1999; Schrock, 1998/1999; Everhart, 1998). Evaluation strategies designed for teachers, on the other hand, tend to emphasize curriculum-related traits or applications in the evaluation of Web pages/sites. For example, the Blue Web'n Web site evaluation rubric (used for evaluating sites being considered for the Blue Web'n searchable database of educational Internet resources) includes a section on "learning process", covering, among other things, "higher-order thinking". The "Evaluation Rubrics for Websites" developed for the Loogootee Community Schools in Indiana focus on the assessment of Web pages created by children as part of their school work. The Website Motivational Analysis Checklist (WebMAC) (Small, 1997), an instrument designed for assessing "the motivational quality of World Wide Web sites" for education, is based on John M. Keller's ARCS Model of Motivational Design (1987a; 1987b; 1989), Taylor's Value-Added Model

(1986), and research on relevance and information retrieval (Schramber, 1994); it included (at the developmental stage in 1998) some 60 items in four basic categories: "engaging", "meaningful", "organized", and "enjoyable". The VOICES model for school Web site evaluation (Rutkowski, 1997a; Rutkowski, 1997b), on the other hand, incorporated the following "equally-weighted criteria": "vision", "originality", "integrity", "community", "empowerment", and "structure". Not all of these criteria would be appropriate for many school library Web pages/sites, depending on the aim or purpose of the pages/site. The author's own teaching Web page on "Evaluation of Resources on the Internet" (Clyde, 1999) highlights the diversity in criteria, strategies, and tools for evaluation of Web pages/sites.

It would appear that current descriptive research that identifies the purposes for which school libraries are creating Web pages/sites, and the information and resources provided through those pages/sites, is necessary before tools that are designed specifically for the evaluation of school library Web pages/sites can be developed. While tools for the evaluation of school library Web sites might be based on current educational and librarianship tools, it is already clear, from the author's 1996 work, that these do not represent the whole answer. School libraries have functions that are related to both librarianship and education but transcend both. Their Web sites seem to reflect this, at least in those cases where the purpose is clear.

Research Questions

The 1996 study identified many problems associated with school library Web pages/sites, including a lack of appreciation of what a school library Web site might achieve and how such a site should be developed. Has the situation improved since 1996? Have school library Web pages/sites become more sophisticated in their aims, purposes, design, organization, and content? Are they now, as a whole, more closely identified with the educational functions of the school library than they were in 1996?

The online directories of school library Web pages indicate that considerably more school libraries have established a Web presence since then: in August 1996, Milbury's directory listed 55 school library home pages that were maintained by school librarians, of which only 39 were available or responding on the day of the survey, whereas in August 1998, there were 191 listed (an increase of 347.2% over two years). The same kind of increase is apparent in Bertland's directory, but because her criteria for inclusion are wider (the school library Web page does not have to be maintained by the school librarian), she listed a larger number of pages/sites than Milbury in both 1996 and 1998. However, an increase in numbers is no guarantee of an overall improvement in presentation or content.

Consequently, a decision was taken to extend the 1996 study into a longitudinal study covering three years, 1996 to 1999. Ongoing developments are being monitored, and a second content analysis of school library Web pages/sites will be undertaken in August 1999. The longitudinal study is designed to address the following research questions:

1. Have the Web pages/sites that were included in the 1996 study been developed further or improved over the three years?

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2. What is the current "state of the art" (as of August 1999) in terms of school library Web pages/sites?
3. Has there been an overall improvement in the school library Web pages/sites over the three years?
4. Are there any differences in aims, purposes, design, organization, and content of school library Web pages/sites between 1996 and 1999?
5. Have any new ways of organizing links on school library Web pages emerged over the three years? Is there any evidence of a developing consensus about the best way or ways of organizing links for effective use?

Methodology

The research outlined in this paper is designed to be descriptive. The basic aims are to identify the current status of school library Web pages/sites and to compare this with the results of the 1996 study to identify changes over time. Given these specific aims, and a topic where little baseline information is readily available, descriptive research techniques are the most appropriate for the study. Researchers looking at Web pages in other fields have come to similar conclusions. For example, Cano and Prentice (1998), who studied Web pages created by or for the tourism industry in Scotland, used a methodology that "consisted of the identification of sites, the development of a content-based classification scheme, and the detailed examination of sites..." to present an overview of "the availability of homepages for the promotion of tourism in Scotland". Gray, Romano and Clark (1998) used a statistically-based content analysis of a random sample of school Web sites in the United States "to establish a baseline describing the state of current practice". However, just as Cano and Prentice identified policy and research implications associated with their findings, and Gray, Romano and Clark identified the need for "effective models" for Web site development in schools, it is anticipated that the results of this longitudinal study of school library Web pages/sites will provide a basis for development work and further research in the future.

As for the 1996 study, the main research methodology to be employed in the longitudinal study will be content analysis of Web pages/sites. However, the analysis to be carried out in August 1999 will have an additional component, a comparative analysis of the results of the 1996 and 1999 studies, with the results of the 1996 study being treated as baseline data for comparative purposes.

There are some problems associated with the use of content analysis to study Web pages, and these problems have an effect on some aspects of the application of the research methodology. Because Web pages are easily updated, they are often updated frequently -- as indeed they should be. As a result, pages may change substantially over a relatively short space of time. This means that the pages/sites selected for analysis must all be viewed within a very short time frame. Fifty pages/sites were included in the 1996 analysis because that proved to be the highest number that could be analyzed by one person within a 24-hour period. The original intention had been to either print the pages for analysis or download them to a database program or a text analysis program, on the one day, and then to carry out the analyses later. This strategy would

have allowed more pages/sites to be included in the study. However, legal advice indicated that this procedure might contravene the copyright laws of some countries, which prohibit, among other things, the storage of a copy of copyright text in a database system. A secondary problem emerged when some of the author's own pages were downloaded to test the efficacy of this method: some context information was lost (through the loss of linked text such as information about the school or school system); and it was not possible to evaluate any links to resources on the Internet.

The longitudinal study has incorporated ongoing monitoring of developments through regular searches of the literature, and through regular checking of a number of school library Web pages/sites. The following procedures will be carried out in August 1999:

1. A content analysis of the 50 Web pages/sites that were included in the 1996 study (or those of the 50 that still exist), using the same matrix that was used in 1996 to record the information. The matrix will be extended as necessary to allow for recording new features and developments since August 1996. This analysis will be used to assess the extent to which the Web pages/sites that were included in the 1996 study have been developed further over the years.
2. A content analysis of 50 randomly-selected school library Web pages/sites, selected using the same procedures as were used to select the 50 pages/sites in the 1996 study. The matrix that was used for the 1996 study will form the basis of the matrix that will be used to record the information; however, it will be extended to allow for new features and developments since August 1996, and a section will be added specifically related to the organization of links on the pages. This analysis will be used to assess the current "state of the art" (as of August 1999) of school library Web pages/sites.
3. Using the matrices, the results of this second 1999 content analysis of 50 pages/sites will be compared with the results of the 1996 analysis, to answer the following research questions: "Has there been an overall improvement in school library Web pages/sites over the three years?" and "Are there any differences in aims, purposes, design, organization, and content of school library Web pages between 1996 and 1999?". In addition, this comparative analysis will answer the final research question, "Have any new ways of organizing links on school library Web pages emerged over the three years? Is there any evidence of a developing consensus about the best way or ways to organize links for effective use?".

Results

The results of the 1999 content analyses and the comparative analyses will be presented at the joint American Association of School Librarians (AASL) and International Association of School Librarianship (IASL) conference in Birmingham, Alabama, in November 1999. They will also be summarized on a Web page that will be developed to support the conference presentation, so that conference participants will have access to the information during and after the conference.

As indicated earlier, it is anticipated that the results of the study will be of particular interest to school librarians/school library media specialists who maintain a school library Web page/site or

who are planning to develop a Web presence. They will also be of interest to educational administrators, educators who are planning pre-service or professional development courses for school librarians/school library media specialists, information technology specialists and network coordinators in schools, and other researchers in this field.

Research Implications

It is clear that large numbers of school libraries have created Web sites, and more would like to do so, though there appears to be little commonality of aims and purposes. However, this raises the larger question, should the school library be developing Web pages at all? Is this activity useful, and, if it is, then how can its value be measured? If it is useful, then what kind of models are available to guide school library Web site development? To what extent are these appropriate? What constitutes "a good school library Web site"? Even at the stage at which this conference paper was written (June 1999), it was clear that quality issues and Web page evaluation criteria/strategies were emerging concerns. The research project described in this paper will provide baseline data which can be used in further studies that address these issues.

The assessment and evaluation of Web sites is becoming more and more important, as sites proliferate and school libraries attempt to provides guides that will lead their users through the best of what is available. In addition, with accountability becoming more critical as a factor in school management, school librarians will be expected to show proof that the time and resources that are devoted to developing a school library Web site are worthwhile. Again, this highlights the importance of evaluation of Web sites. Consequently, a number of models or strategies for Web page/site evaluation have been developed, many of which have some applicability in the school or library setting, including those cited earlier in this paper. It would be well worth testing these through further work with the Web pages/sites created by school libraries, with the aim of developing a model that might be used specifically for the evaluation of school library Web sites.

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